

## Sinergija znanosti i kliničkog rada

Kongres s međunarodnim sudjelovanjem u organizaciji Zavoda za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu i Hrvatskog društva za minimalno intervencijsku dentalnu medicinu Hrvatskog liječničkog zbora

27. i 28. listopada 2017., Zagreb, Hrvatska

## Synergy of Science and Clinical Practice

Congress with International Participation organised by Department of Endodontics and Restorative Dentistry, School of Dental Medicine, University of Zagreb and Croatian Society for Minimum Intervention Dentistry - Croatian Medical Association

October, 27<sup>th</sup> and 28<sup>th</sup> 2017, Zagreb, Croatia

### Voditelji • Organizational Board

Prof.dr.sc. Goranka Prpić Mehičić

Prof.dr.sc. Ivana Miletić

### Znanstveni odbor • Scientific Board

Prof.dr.sc. Silvana Jukić Krmek - predsjednica

Dr.sc. Ana Malčić Ivanišević

Dr.sc. Valentina Brzović Rajić

### MIKROLAMINIRANI STAKLENOIONOMERNI CEMENTI - PRIKAZ SLUČAJA

Frane Anzulović<sup>1</sup>, Marko Rajda<sup>2</sup>, Anja Baraba<sup>3</sup>

<sup>1</sup>Student 6. godine, Stomatološki fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska

<sup>2</sup>Dom zdravlja, Šestinska cesta 1, Zagreb, Hrvatska

<sup>3</sup>Zavod za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska

**Uvod:** Staklenoionomerni cementi (SIC) kemijski se vežu za tvrda zubna tkiva, tolerantni su na prisutnost vlage, koeficijent termalne ekspanzije odgovara istome tvrdih zubnih tkiva, biokompatibilni su, bioaktivni te jednostavni za uporabu što im omogućuje široku primjenu u modernoj dentalnoj medicini. Mikrolaminirani SIC-i predstavljaju novu generaciju cementa koji imaju poboljšana fizičko-mehanička svojstva te se mogu rabiti za izradu trajnih ispuna u stražnjoj regiji.

**Prikaz slučaja:** Nakon primjene lokalne anestezije za donji desni prvi kutnjak, karijesna lezija je otvorena okruglim dijamantnim svrdlom uz vodenog hlađenje. Zub je izoliran gumenom plahticom, a za uklanjanje karijesne lezije, odabran je modificirani atraumatski tretman (ARTm). Okruglim čeličnim svrdlom, bez vodenog hlađenja, uklonjena je karijesna lezija u području caklinsko – dentinskog spojišta, a parapulpno je karijesni dentin uklonjen ručnim instrumentima. Nakon kondicioniranja kaviteta 10%-tnom poliakrilnom kiselinom (Dentin conditioner, GC, Tokio, Japan) kroz 20 sekundi, ispiranja vodom i sušenja sterilnom vaticom, kavitet je zatvoren kapsuliranim SIC-om EQUIA Forte Fil (GC, Tokio, Japan). Nakon usklađivanja okluzije i artikulacije, na površinu je nanesen premaz EQUIA Forte Coat (GC, Tokio, Japan) koji je osvijetljen LED polimerizacijskom lampom.

U opisanom prikazu slučaja, kod pacijenta s visokim rizikom od nastanka karijesa i uznapredovalom karijesnom lezijom na donjem desnom prvom kutnjaku, modificiranim ART-om uklonjen je vanjski, inficirani dio karijesne lezije kako se ne bi ugrozio vitalitet pulpe. Zatim je na unutrašnji, demineralizirani dentin postavljen trajni ispun od mikrolaminiranog SIC-a zbog svojstva bioaktivnosti materijala i mogućnosti interne remineralizacije demineraliziranog dentina. Na kontrolnom pregledu nakon 6 mjeseci zub je asimptomatski, a ispun zadovoljava estetske, funkcionalne i biološke zahtjeve.

### MICROLAMINATED GLASSIONOMER CEMENTS - A CASE REPORT

Frane Anzulović<sup>1</sup>, Marko Rajda<sup>2</sup>, Anja Baraba<sup>3</sup>

<sup>1</sup>Student of 6<sup>th</sup> year, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

<sup>2</sup>Dental Health Center, Šestinska cesta 1, 10 000 Zagreb, Croatia

<sup>3</sup>Department of Endodontics and Restorative Dentistry, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

**Introduction:** Glass ionomer cements (GIC) chemically bond to hard dental tissues, they are moisture tolerant and their coefficient of thermal expansion is similar to that of hard dental tissues. They are biocompatible, bioactive and simple for use, which allows them to be widely used in modern dental medicine. Microlaminated GICs represent a new generation of cements that have improved physico-mechanical properties and can be used as permanent fillings in the posterior region.

**Case report:** After applying local anesthesia for the lower right first molar, caries lesion was opened with a round diamond drill with water cooling, the tooth was isolated with a rubber dam, and the modified atraumatic treatment (ARTm) was performed for the removal of caries lesion. Carious tissue at dentin-enamel junction was removed with round steel burs, without water cooling and, on the parapulpal wall, carious dentin was removed with hand instruments. After conditioning the cavity with 10% polyacrylic acid (Dentin conditioner, GC, Tokyo, Japan) for 20 seconds, rinsing the cavity with water and drying it with sterile cotton pellet, the cavity was filled with capsulated GIC EQUIA Forte Fil (GC, Tokyo, Japan). After checking occlusion and articulation, the surface was coated with EQUIA Forte Coat (GC, Tokyo, Japan), which was light-cured with a LED polymerization lamp.

In this clinical case, in a patient with high caries risk and advanced caries lesion on the lower right first molar, the external infected layer of caries lesion was removed using modified ART, in order to preserve the vitality of the pulp. On the inner layer of demineralized dentin, due to the bioactivity of the material and the ability for internal remineralization, a permanent filling of the microlaminated GIC was placed. At follow-up visit after 6 months, the tooth is asymptomatic and the filling fulfills the aesthetic, functional and biological requirements.

## KLINIČKA I RADIOLOŠKA ANALIZA SLUČAJEVA UPUĆENIH NA RESEKCIJU VRŠKA KORIJENA ZUBA

Barbara Babić<sup>1</sup>, Janja Barun<sup>1</sup>, Ana Kotarac Knežević<sup>2</sup>, Ivan Salarić<sup>2</sup>, Silvana Jukić Krmek<sup>3</sup>, Ana Malčić Ivanišević<sup>3</sup>

<sup>1</sup>Študentica 6. godine Studija dentalne medicine, Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska

<sup>2</sup>Zavod za oralnu kirurgiju Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska

<sup>3</sup>Zavod za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska

**Svrha istraživanja** bila je utvrditi povezanost kvalitete punjenja korijenskog kanala zuba upućenih na zahvat resekcije vrška korijena sa stomatološkom anamnezom, kliničkim, radiološkim i intraoperativnim nalazom te odlukom specijalista oralne kirurgije o postupku.

**Materijali i postupci:** U istraživanju je sudjelovalo 86 pacijenata sa 106 zuba. Za potrebe istraživanja sastavljen je upitnik za bilježenje anamnestičkih podataka (broj prethodnih liječenja, pokušaj revizije endodontskog liječenja, liječenje proveo stomatolog opće prakse ili specijalist endodoncije, prisutnost protetskog nadomjestka), simptoma (spontane boli, boli na zagriz i toplo/hladno), kliničkog nalaza oteklina ili fistule, radiološkog nalaza (punjenja korijenskog kanala, periapikalne transparentije, intrakanalne nadogradnje, separiranog instrumenta ili perforacije), intraoperativnog nalaza (fenestracije, dehiscijencije kosti ili vertikalne frakture korijena) te odluke o postupku.

**Rezultati:** Statistička analiza pokazala je da je u provedenom istraživanju veći broj slučajeva analiziran u operativnoj sali, a manji u kirurškoj ambulanti prilikom pregleda i dogovora za zahvat (u omjeru 3,8:1). Srednja dob ispitanika bila je 44,4 godine (raspon godina: 14-81). Najzastupljeniji zubi u uzorku bili su gornji sjekutići (66%). Veći broj zubi bio je protetski rekonstruiran (62,9%), a od toga je 53,5% bilo opskrbljeno intrakanalnom nadogradnjom. Stomatolog opće prakse liječio je 97,2% zuba upućenih na resekciju vrška korijena, a revizija je pokušana u samo 20,6% slučajeva. Punjenje je bilo homogeno i unutar 1 mm od apeksa u 21,6% slučajeva. Resekcija vrška korijena, revizija, ekstrakcija i nikakav postupak bili su odabrani u redom 90,1%, 5,4%, 1,8% i 2,7% slučajeva. Spontana bol i dehiscijencija kosti značajno su učestalije kod punjenja unutar 1 mm od apeksa ( $p < 0,05$ ).

**Zaključak:** Nizak postotak adekvatnog punjenja kod upućenih slučajeva i visok postotak odluke za resekciju vrška korijena upućuju na potrebu povećanja svijesti o mogućnostima ponovljenog liječenja zuba nekirurškim putem.

## USPOREDBA APIKALNOG PROPUŠTANJA KOD TRI TEHNIKE PUNJENJA KORIJENSKIH KANALA

Antonela Beljan, Danijela Kalibović Govorko<sup>2</sup>, Livia Cigić<sup>2</sup>, Ivana Medvedec Mikić<sup>2</sup>

<sup>1</sup>Privatna praksa, Split, Hrvatska

<sup>2</sup>Studij dentalne medicine Medicinskog fakulteta Sveučilišta u Splitu, Split, Hrvatska

**Svrha rada** bila je ispitati propusnost ispuna korijenskih kanala izrađenih tehnikom hladne lateralne kondenzacije, tehnikom jedne gutaperke i tehnikom Thermafil u kontroliranim uvjetima vakuma.

**Materijali i postupci:** U istraživanju je korišteno 49 jednokorijenskih zubi koji su podijeljeni u 3 skupine po 15 uzoraka, 2 pozitivne i negativne kontrole. Dvije skupine instrumentirane su ručnom tehnikom „step-back“ i ispunjene tehnikom hladne lateralne kondenzacije i tehnikom termoplastične gutaperke s krutim nosačem (Thermafil). Treća skupina instrumentirana je strojno, sustavom ProTaper i ispunjena tehnikom jedne gutaperke. Nakon sedmodnevnog stvrdnjavanja, uzorci su premazani izolacijskim lakom i voškom te stavljeni u vakumsku posudu s dodatkom metilenskog modrila. Zrak je istisnut uz pomoć vakuumske pumpe i postignut je tlak od 75 Torra. Uzorci su longitudinalno raspoloženi i izmjereni je linearni prodor boje uz pomoć stereomikroskopa.

**Rezultati:** Srednje vrijednosti dobivenih mjerenja bile su  $4,74 \pm 4,31$  mm kod hladne lateralne kondenzacije,  $3,61 \pm 4,36$  mm kod tehnike jedne gutaperke i  $1,17 \pm 0,86$  kod tehnike Thermafil. Temeljem dobivenih rezultata statistički znatno manji prodor boje dobio je tehnikom Thermafil u usporedbi s tehnikom hladne lateralne kondenzacije.

**Zaključak:** Iako je Thermafil tehnika rezultirala najmanjim prodorom boje, sve tri tehnike punjenja pokazale su apikalno propuštanje.

## CLINICAL AND RADIOGRAPHIC ANALYSIS OF CASES REFERRED TO ROOT END RESECTION

Barbara Babić<sup>1</sup>, Janja Barun<sup>1</sup>, Ana Kotarac Knežević<sup>2</sup>, Ivan Salarić<sup>2</sup>, Silvana Jukić Krmek<sup>3</sup>, Ana Malčić Ivanišević<sup>3</sup>

<sup>1</sup>Student of the 6<sup>th</sup> year, School of dental medicine, University of Zagreb, Zagreb, Croatia

<sup>2</sup>Department of Oral Surgery, School of dental medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup>Department of endodontics and restorative dentistry, School of dental medicine, University of Zagreb, Zagreb, Croatia

**The aim** of the research was to determine the relationship between the quality of the root canal filling of the teeth referred to root-end resection procedure and dental anamnesis, clinical, radiographic and intraoperative finding, and the treatment decision of the specialist of oral surgery.

**Materials and methods:** Eighty-six patients with 106 teeth took part in the research. For the purpose of this study, a questionnaire was composed to record anamnestic data (number of previous treatments, attempted revision before root-end resection, tooth treated by general practice dentist or specialist of endodontics, prosthodontic restoration), symptoms (spontaneous pain, pain when biting and hot/cold stimuli), swelling or sinus tract clinical finding, radiographic finding (root canal filling, periapical translucency, intraradicular post, separated instrument or perforation), intraoperative finding (fenestration, dehiscence of the bone or vertical root fracture), and treatment decision.

**Results:** Statistical analysis showed that the most of cases were analysed in operating room and less in surgical infirmary during the first examination and scheduling for the procedure (in ratio 3,8:1). Sample included more females than males (59,5% versus 40,5%). Patients' average age was 44,4 years (range of years: 14-81). The most common teeth were upper incisors (66%). The most of teeth were reconstructed with prosthodontics (62,9%) and from that, 53,5% of teeth were supplied by intracanal post. General dentist has treated 97,2% of teeth referred to root-end resection, and endodontic retreatment was attempted in only 20,6% of the cases. In 21,6% of the cases root canal filling was homogeneous and within 1 mm from the apex. Root-end resection, retreatment, extraction and no treatment were selected in 90,1%, 5,4%, 1,8% and 2,7% of the cases respectively. Spontaneous pain and dehiscence of the bone were significantly more common in root end fillings within 1 mm from the apex ( $p < 0,05$ ).

**Conclusion:** Low percentage of adequate root canal fillings in the referred cases and high percentage of root-end resection decisions suggest there is a need to increase awareness of non-surgical retreatment options.

## COMPARISON OF APIKAL LEAKAGE IN ROOT CANALS OBTURATED WITH THREE DIFFERENT GUTTA-PERCHA TECHNIQUES

Antonela Beljan<sup>1</sup>, Danijela Kalibović Govorko<sup>2</sup>, Livia Cigić<sup>2</sup>, Ivana Medvedec Mikić<sup>2</sup>

<sup>1</sup>Private practice, Split, Croatia

<sup>2</sup>Study Programme of Dental Medicine, School of Medicine, University of Split, Split, Croatia

**The aim of this study** was to assess the apical leakage of root canals obturated with three different gutta-percha techniques: cold lateral condensation, single-cone technique and Thermafil technique in controlled vacuum conditions.

**Material and Methods:** Forty-nine single-rooted teeth were divided into three tested groups (N=15) and two groups which served as a positive and negative control (N= 2). First group was instrumented using manual technique (Step-back) and was obturated by cold lateral condensation. Second group was also instrumented using Step back technique but it was obturated with thermoplasticized gutta-percha with solid carrier (Thermafil). Third group was instrumented using rotary technique (ProTaper) and obturated with suitable single-cone gutta-percha. After a one-week setting period, the samples were covered by varnish and wax. Positive control samples were left with apical 2 mm unisolated and negative control samples were completely isolated. All samples were placed in a vacuum flask containing methylene blue dye and air was evacuated with a vacuum pump to an absolute pressure of 75 Torr for 30 minutes. The samples were sectioned longitudinally and the linear extent of dye penetration was measured under the stereomicroscope.

**Results:** Mean linear dye penetration values were: cold lateral condensation technique  $4.67 \pm 4.19$  mm, single-cone technique  $3.61 \pm 4.36$  mm, and Thermafil technique  $1.17 \pm 0.86$  mm. The results indicate significantly lower dye-penetration in samples obturated using Thermafil technique, when compared to the samples obturated using single-cone technique and cold lateral condensation.

**Conclusion:** Even though Thermafil technique resulted in the least amount of a dye-penetration, all obturation techniques showed apical leakage.

# STAVOVI I NAVIKE POLAZNIKA ZAVRŠNE GODINE PREKVALIFIKACIJA UČILIŠTA AMBITIO I UČENIKA 4. RAZREDA SREDNJE MEDICINSKE ŠKOLE SPRAV ORALNOG ZDRAVLJA

Maja Bilić – Prčić<sup>1</sup>, Željko Verzak<sup>2</sup>, Ana Ivanišević Malčić<sup>3</sup>, Alen Stranjik<sup>4</sup>, Ivana Miletić<sup>3</sup>, Valentina Brzović Rajić<sup>3</sup>

<sup>1</sup> Stomatološka poliklinika Kustec, Zagreb, Hrvatska

<sup>2</sup> Zavod za pedodonciju, Stomatološki fakultet Sveučilišta u Zagrebu, Zagreb, Hrvatska

<sup>3</sup> Zavod za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet Sveučilišta u Zagrebu, Zagreb, Hrvatska

<sup>4</sup> Učilište Ambito, Ustanova za obrazovanje odraslih, Zagreb, Hrvatska

**Svrha istraživanja** je bila usporediti stavove i navike o oralnoj higijeni polaznika završne godine prekvalifikacija Učilišta Ambito i učenika 4. razreda Srednje medicinske škole.

**Materijali i postupci:** Upitnik *Hiroshima University-Dental Behavioural Inventory (HU-DBI)* ispunilo je 56 polaznika Učilišta Ambito i 23 učenika 4. razreda Srednje medicinske škole. Za opis odgovora na HU-DBI upitnik upotrijebljene su apsolutne i relativne frekvencije, a za opis HU-DBI skora upotrijebljene su srednja vrijednost i standardna devijacija. Usporedba učestalosti odgovora na pojedina pitanja u HU-DBI upitniku između dviju grupa analizirana je Fisherovim egzaktnim testom dok je razlika u HU-DBI skoru testirana Wilcoxon-Mann-Whitneyevim testom.

**Rezultati:** Polaznike Učilišta češće brine boja njihovog zubnog mesa u odnosu na učenike Srednje medicinske škole ( $p=0,017$ ). U odnosu na učenike Srednje medicinske škole polaznici Učilišta češće izjavljuju da ih nikad nitko nije profesionalno savjetovao kako prati zube ( $p=0,044$ ). Učenici Srednje medicinske škole češće smatraju da i bez paste mogu dobro očistiti zube ( $p=0,021$ ). Polaznici Učilišta češće se ne brinu zbog lošeg zadaha ( $p=0,0018$ ) i češće smatraju da je nemoguće spriječiti bolest zubnog mesa četkanjem ( $p=0,025$ ). Iako je HU-DBI skor bio visok u obje ispitivane grupe, značajno je viši kod učenika Srednje medicinske škole, 7,2 u odnosu na 6,3 kod polaznika Učilišta Ambito ( $p=0,018$ ).

**Zaključak:** Programi Učilišta i Srednje medicinske škole pozitivno utječu na navike i stavove o oralnoj higijeni, ali distribucija odgovora na pojedina pitanja upućuje na potrebu dodatnog profesionalnog savjetovanja i stjecanja novih znanja o provođenju oralne higijene.

# ATTITUDES AND HABITS REGARDING ORAL HEALTH IN FINAL YEAR AMBITIO SCHOOL PREQUALIFICATION PROGRAM - AND FINAL - YEAR MEDICAL HIGH SCHOOL STUDENTS

Maja Bilić - Prčić<sup>1</sup>, Željko Verzak<sup>2</sup>, Ana Ivanišević Malčić, Alen Stranjik<sup>4</sup>, Ivana Miletić<sup>3</sup>, Valentina Brzović Rajić<sup>3</sup>

<sup>1</sup>Dental Polyclinic Kustec, Zagreb, Croatia

<sup>2</sup>Department of Pedodontics, Faculty of Dentistry, University of Zagreb, Zagreb, Croatia

<sup>3</sup>Department of Endodontics and Restorative Dentistry, Faculty of Dentistry, University of Zagreb, Zagreb, Croatia

<sup>4</sup>Ambito School, Adult Education Institution, Zagreb, Croatia

**The aim of the study** was to compare the attitudes and habits regarding oral hygiene of the participants of the final year prequalification of the Ambito School and the 4<sup>th</sup> grade of the Medical High School.

**Materials and Methods:** The Hiroshima University-Dental Behavioural Inventory (HU-DBI) questionnaire was filled in 56 Ambito School students and 23 in the 4<sup>th</sup> grade of the Medical High School. For the description of the answers to the HU-DBI questionnaire, absolute and relative frequencies were used, and mean value and standard deviation were used to describe the HU-DBI sketch. The comparison of the frequency response to individual questions in the HU-DBI questionnaire between the two groups was analysed by Fisher's exact test while the difference in HU-DBI was tested by the Wilcoxon-Mann-Whitney test.

**Results:** The attendants of the Ambito School are more worried about the colour of their gums compared to the students of the Medical High School ( $p = 0.017$ ). Compared to the students of the Medical School, the Ambito School attendants state that they have never been consulted professionally how to take care of their teeth ( $p = 0.044$ ). Medical School students often find that without the tooth paste they can clean the teeth well ( $p = 0.021$ ). Graduates of the Ambito School more often do not worry about bad breath ( $p = 0.0018$ ) and more often find it impossible to prevent gum disease by brushing ( $p = 0.025$ ). Although HU-DBI was high in both groups, it was significantly higher in Medical School students, 7.2 compared to 6.3 at the Ambito School participants ( $p = 0.018$ ).

**Conclusion:** Ambito and Medical School programs have a positive impact on habits and attitudes about oral hygiene, but the distribution of responses to specific questions points to the need for additional professional counselling and the acquisition of new knowledge on oral hygiene.

# ESTETSKA REKONSTRUKCIJA GORNJEG SREDIŠNJEG SJEKUTIĆA DIREKTNOM KOMPOZITNOM LJUSKICOM: PRIKAZ SLUČAJA

Martina Brumini

Dom zdravlja Primorsko-goranske županije, Čabar, Hrvatska

**Uvod:** Estetska rekonstrukcija gornjeg središnjeg sjekutića predstavlja jedan od najvećih izazova moderne dentalne medicine.

**Prikaz slučaja:** Pacijentica (36) javlja se u ordinaciju nezadovoljna izgledom gornjeg lijevog središnjeg sjekutića. Navodi endodontsko liječenje zuba 2006. godine. Od tada, kruna zuba rekonstruirana je u nekoliko navrata kompozitnim ispunima radi pacijentičinog nezadovoljstva estetikom. Kliničkim pregledom uočeno je više dotrajalih kompozitnih ispuna. Rubne pukotine i obojenja prisutni su na mezijalnom, distalnom i incizalnom dijelu a prevjes na cervikalnom dijelu labijalne površine. Zub je asimptomatski. Perkusija i palpacija su negativne. Preoperativno se provela analiza okluzijskih odnosa. Radiološka snimka pokazuje homogeno punjenje korijenskih kanala uredne radne duljine, bez znakova patoloških procesa. Predložene su terapijske mogućnosti te se pacijentica odlučuje na direktnu kompozitnu ljusku. Uklonjeni su postojeći kompozitni ispuni. Preparacija labijalne površine prati gingivni rub i završava u razini gingive. Incizalni brid nije brušen. Primijećena se direktna metoda restauracije. Cervikalni dio nadomješten je A2 kompozitom, nakon čega je labijalna ploha rekonstruirana tehnikom slojevanja A1 kompozitom. Završna obrada ljuske provela se dijamantrnim svrdlima fine zrnatosti i diskovima u svrhu postizanja odgovarajuće morfologije i dobrog rubnog zatvaranja.

Odgovarajuća preparacija labijalne površine te tehnika slojevanja kompozita, uz prikladan odabir boje i završnu obradu, osiguravaju dugovječnost restauracije i zadovoljavaju estetske zahtjeve pacijenta. Rekonstrukcija gornjeg središnjeg sjekutića direktnom kompozitnom ljuskom pokazala se kao relativno brzo i ekonomski prihvatljivo rješenje.

# ESTHETIC RECONSTRUCTION OF UPPER CENTRAL INCISOR WITH DIRECT COMPOSITE VENEER: A CASE REPORT

Martina Brumini

Community Health Centre of Primorsko-goranska County, Čabar, Croatia

**Introduction:** Esthetic reconstruction of upper central incisor is considered one of the greatest challenges in modern dental medicine.

**Case report:** A patient (36) came to dental medicine office unsatisfied with the appearance of the upper left central incisor. The patient reported endodontic treatment in 2006. Since then, the tooth was reconstructed using composite resins several times due to patient's dissatisfaction with esthetics. Clinical examination revealed multiple inadequate composite restorations. Marginal fractures and discolourations on the mesial, distal and incisal part and marginal overhang on cervical part of the labial surface were observed. The tooth was asymptomatic. Percussion and palpation tests were negative. Pre-operative examination of the occlusion was performed. Radiographic examination showed homogeneous root canal filling with acceptable filling length and no signs of pathology. Treatment options were explained and patient elected direct composite veneer. Previous composite restorations were removed. Preparation of the labial surface followed the contour of the gingival tissue and the margins were placed equigingivally. No incisal preparation was performed. A direct restorative approach with free-hand bonding technique was performed. The cervical part was restored using A2 composite resins. The labial surface was reconstructed with additional A1 composite layers. The restoration was polished using finishing burs and discs in order to assure proper tooth morphology and good marginal adaptation. Appropriate preparation of the labial surface and layering technique, in addition to adequate colour selection and final polishing, assured longevity of the restoration and satisfied esthetic requirements of the patient. Reconstruction of an upper central incisor with direct composite veneer revealed as relatively quick and economical solution.

## USPOREDBA UČINKOVITOSTI VIZUALNO-TAKTILNE METODE, UREDAJA DIAGNODENT I RENDGENSKIH SNIMAKA U OTKRIVANJU OKLUZALNIH KARIJESNIH LEZIJA NA TVRDIM ZUBNIM TKIVIMA

Dino Caktaš<sup>1</sup>, Josipa Čolak<sup>2</sup>, Ivana Medvedec Mikić<sup>3</sup>

<sup>1</sup>Privatna ordinacija, Josip Bučan, Ulica kralja Zvonimira 76, 21210 Solin, Hrvatska

<sup>2</sup>Studentica 6. godine studija Dentalne medicina Medicinskog fakulteta Sveučilišta u Splitu, Split, Hrvatska

<sup>3</sup>Katedra za restaurativnu dentalnu medicinu i endodonciju, studij Dentalne medicine Medicinskog fakulteta, Sveučilište u Splitu, Split, Hrvatska

**Svrha istraživanja** bila je utvrditi postoji li razlika između tri metode (vizualno-taktilna, radiografska i DIAGNODent) u dijagnostici okluzalnog karijesa.

**Materijali i postupci:** U istraživanju je korišteno četrdeset i osam ekstrahiranih zubi, dva-naest premolara i trideset i šest molara bez restaurativnog ispuna (n=48). Zubi su čuvani u 20% vodenj otopini vodikovog peroksida. Prije istraživanja zubi su očišćeni, posušeni te pripremljeni za ispitivanje dijagnostičkim metodama. Zubi su pohranjeni i numerirani u spužvi te su slikani tehnikom zagrizne snimke. Potom su dva ispitivača dijagnosticirala okluzalni zubni karijes pomoću vizualno-taktilne metode temeljene na ICDAS klasifikaciji, radiološkog ispitivanja i laserskog fluorescentnog sustava (DIAGNODent uređaj). Na samom kraju okluzalne karijesne lezije na zubima su preparirane dijamantnim svrdlima za mikropreparaciju. Dubina karijesnih lezija je utvrđena korištenjem stomatološke sonde te se time odredio zlatni standard prema kojemu su uspoređivane dijagnostičke metode.

**Rezultati:** DIAGNODent uređaj je pokazao najveću točnost i osjetljivost pri detekciji okluzalnog zubnog karijesa. Radiografsko ispitivanje pokazalo je manju točnost u detekciji karijesa dok je vizualno-taktilna metoda imala najmanju osjetljivost, ali najvišu specifičnost. Vizualno – taktilna metoda i radiografsko ispitivanje su pokazali osrednju podudarnost mjerenja dvaju ispitivača dok je najlošiju podudarnost imao DIAGNODent uređaj.

**Zaključak:** Sve tri dijagnostičke metode su pokazale odstupanja od metode zlatnog standarda. Za uspješnu detekciju okluzalnog zubnog karijesa potrebno je koristiti kombinacije dijagnostičkih metoda kako bi što točnije i preciznije mogli postaviti ispravnu dijagnozu.

## COMPARISON OF THE EFFECTIVENESS OF VISUAL - TACTILE METHOD, DIAGNODENT DEVICE AND X – RAY IMAGES AT DETECTING OCCLUSAL DENTAL CARIES

Dino Caktaš<sup>1</sup>, Josipa Čolak<sup>2</sup>, Ivana Medvedec Mikić<sup>3</sup>

<sup>1</sup>Private practice Josip Bučan, Ulica kralja Zvonimira 76, 21210 Solin, Croatia

<sup>2</sup>Student of the 6<sup>th</sup> year of Study Program of Dental Medicine, School of Medicine, University of Split, Split, Croatia

<sup>3</sup>Department of Endodontics and Restorative Dental Medicine, Study Programme of Dental Medicine, School of Medicine, University of Split, Split, Croatia

**The aim** of this study was to compare and evaluate the difference between three diagnostic methods (visual–tactile method, X–ray images and DIAGNODent device) for detection of occlusal dental caries.

**Materials and methods:** In total forty-eight extracted teeth without restorative filling, were used in this study (twelve premolars and thirty-six molars). The teeth were stored in a 20% hydrogen peroxide solution, cleaned and dried to prepare suitable conditions for testing with three diagnostic methods. After that teeth were set in a sponge, numbered and then X-ray images using Bite-wing technique were taken. Two examiners using visual-tactile examination based on ICDAS classification diagnosed presence or absence of occlusal dental caries. Detection of caries on radiograms and his depth were noted. Occlusal surfaces were examined using DIAGNODent device. Finally occlusal surfaces of teeth were opened with a diamond bur for micropreparation and depth of the existing carious lesions was determined using dental probe. This served as a gold standard for comparison with other methods.

**Results:** The DIAGNODent device showed the highest accuracy and sensitivity for detecting occlusal dental caries, followed by radiographic examination. Visual–tactile examination had the lowest sensitivity but the highest specificity. Visual–tactile examination and radiographic examination showed fair to good inter–examiner agreement, while DIAGNODent device showed poor inter–examiner agreement.

**Conclusion:** All three tested diagnostic methods were not reliable enough for detection of occlusal dental caries. Combinations of all three diagnostic methods is necessary for correct detection of occlusal dental caries.

## ENDODONTSKI TRETMAN PACIJENTA NA DUGOGODIŠNJOJ BISFOSFONATNOJ TERAPIJI I OZBIJNIM KOMORBIDITETOM

Lajla Hasić Branković<sup>1</sup>, Aida Šaban<sup>2</sup>, Irmina Tahmišćija<sup>1</sup>, Samra Korać<sup>1</sup>, Aida Džanković<sup>1</sup>

<sup>1</sup>Zavod za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet Univerziteta u Sarajevu, Sarajevo, Bosna i Hercegovina

<sup>2</sup>Specijalizant Zavoda za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet Univerziteta u Sarajevu, Sarajevo, Bosna i Hercegovina

**Uvod:** Premda FDA preporuča protokol za stomatološki tretman pacijenta na bisfosfonatnoj terapiji, ne postoje precizne preporuke da li je endodontska terapija indicirana kada već postoji patološki proces endodontske etiologije u kosti.

**Prikaz slučaja:** Rad je prikaz slučaja modifikacije protokola endodontske terapije fistulirajućeg apikalnog parodontitisa, kod pacijenta na bisfosfonatnoj terapiji i s kompleksnim zdravstvenim problemima :

Sy. Sjögren, Osteoporosis, Hypothyreosis, disfunkcija temporomandibularnog zgloba. Najvažniji čimbenici koji su zahtijevali modifikaciju su :

1. Dugogodišnja terapija bisfosfonatima (povećan rizik od osteonekroze),
2. Nemoćnost postavljanja koferdama (stalni podražaj na kašalj zbog Sy.Sjögren); te posljedična opasnost od nadražaja sluznice irigansima,
3. Temporomandibularna disfunkcija koja nalaže skraćivanje rada u jednoj posjeti,
4. Modifikacija međuposjetne medikacije korijenskog kanala obzirom na ritam bolusa citoterapije koju pacijentica istovremeno prima
5. Značajna opstrukcija korijenskog kanala koja je utvrđena u tijeku instrumentacije. Iz navedenih razloga, trajanje posjete se skratilo primjenom „single-file“ tehnike rada, odgovarajuća kemijska obrada kanala postignuta je upotrebom 5,25% NaOCl u formi gela (bez opasnosti od nadražaja okolne sluznice), a produžena je međuposjetna medikacija kombinacijom preparata na bazi kalcijeva hidroksida i klorheksidina.

Nakon završetka endodontske terapije, kontrolni RTG pokazuje zadovoljavajuće znake cijeljenja apikalnog parodontitisa. Ipak, konačna ocjena uspjeha endodontske terapije u ovom slučaju će moći biti donesena tek kroz naredni opservacijski period, obzirom da postoji mogućnost osteonekroze kao posljedica terapije bisfosfonatima.

**Zaključak:** Činjenica da se broj pacijenata na bisfosfonatnoj terapiji svakodnevno povećava, kao i činjenica da se dozna granica pojave osteoporotičnih promjena snižava, zahtijeva ozbiljna klinička istraživanja i izrade preciznijih endodontskih protokola.

## ROOT CANAL TREATMENT PATIENT WITH LONG-TERM BISPHOSPHONATE THERAPY AND SEVERE COMORBIDITY

Lajla Hasić Branković<sup>1</sup>, Aida Šaban<sup>2</sup>, Irmina Tahmišćija<sup>1</sup>, Samra Korać<sup>1</sup>, Aida Džanković<sup>1</sup>

<sup>1</sup>Department of Endodontics and Restorative Dentistry, Faculty of Dentistry University of Sarajevo, Sarajevo, Bosnia and Herzegovina

<sup>2</sup>Resident at Department of Endodontics and Restorative Dentistry, Faculty of Dentistry University of Sarajevo, Sarajevo, Bosnia and Herzegovina

**Introduction:** In order to prevent osteonecrosis in patient undergoing bisphosphonate therapy, FDA developed a protocol for the dental treatment. There are no precise recommendations whether root canal treatment is indicated if there is extensive periapical lesion.

**Case report:** The paper presents root canal treatment of 36 tooth with apical periodontitis and sinus tract, of 39 years old patient with long-term bisphosphonate therapy and complex health problems: Sy. Sjögren, osteoporosis, hypothyreosis, temporomandibular joint dysfunction. The modification of root canal treatment emerged as consequences of:

1. Increased risk of osteonecrosis as result of long-term bisphosphonates therapy,
2. Impossible rubber-dam placement due to constant cough caused by Sy.Sjögren, resulting in risk of mucous irritation with irrigants,
3. Temporomandibular dysfunction requiring shortening of work in one session,
4. Modification of the inter-seance canal medication due to cyto-therapy that patient receives simultaneously,
5. Significant obstruction of the root canals established during the treatment.

For the above reasons, the appointments duration were achieved using single-file technique, adequate chemical treatment with 5.25% NaOCl gel (without the risk of mucosal irritation) and intracanal medication by combination of Ca(OH)<sub>2</sub> and chlorhexidine. Control image showed satisfactory signs of apical healing. The final success evaluation requires extended observation period, due to possibility of subsequent osteonecrosis associated with bisphosphonate therapy.

**Conclusion:** The number of patients on bisphosphonate therapy increases daily with simultaneously decrease of age limit for osteoporotic changes.

This requires serious clinical research and the development of more precise endodontic protocols.



**NEODGOVARAJUĆI TREPANACIJSKI OTVOR I NJEGOVE POSLJEDICE – PRIKAZ SLUČAJA**Silvana Jukić Krmek<sup>1</sup>, Renata Poljak Guberina<sup>2</sup><sup>1</sup>Zavod za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska<sup>2</sup>Katedra za dentalnu protetiku, Studij dentalne medicine, Medicinski fakultet Sveučilišta u Splitu, Split, Hrvatska

**Uvod:** Odgovarajući trepanacijski otvor je preduvjet uspješnog endodontskog liječenja. Posljedice neodgovarajućeg trepanacijskog otvora mogu biti mnogobrojne od nepronaženja svih kanala, nedovoljnog čišćenja i oblikovanja endodontskog prostora, iatrogenih perforacija, stepenica u kanalu pa do loma instrumenta. Nedovoljna trepanacija kojom nije uklonjen krov pulpne komore najčešće rezultira kombinacijom navedenih komplikacija.

**Prikaz slučaja:** Pacijent u dobi od 26 godina dolazi na Zavod za endodonciju s uputnicom za reviziju zuba 26. Rtg analiza je pokazala osim opsežnog periapikalnog procesa, neodgovarajuće punjenje korijenskih kanala i separirani instrument u mezijalnom korijenu. Nakon uklanjanja postojećeg kompozitnog ispuna uočen je krov s otvorenim rogovima pulpe kroz koje su instrumentirani kanali. Krov pulpne komore je uklonjen i pristupilo se instrumentaciji četiri korijenska kanala. Premda je separirani instrument bio u apikalnom dijelu zavnutog meziobukalnog kanala uspjelo se proći pored njega i dovršiti instrumentaciju. Kanali su instrumentirani Step-back tehnikom ručnim instrumentima tipa Hedstroem uz cervikalno širenje Gates-Gliddenom, a napunjeni su gutaperkom i AH Plus punilom tehnikom hladne lateralne kondenzacije. Kontrolna snimka je pokazala odgovarajuće opturirane korijenske kanale.

**ISTRAŽIVANJE UPOTREBE ŠTITNIKA ZA ZUBE TIJEKOM BAVLJENJA BORILAČKIM SPORTOVIMA**Ivan Lukšić<sup>1</sup>, Žiga Lužnik<sup>2</sup>, Samir Čimić<sup>3</sup><sup>1</sup>Student 4. godine Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska<sup>2</sup>Student 3. godine Stomatološkog fakulteta Sveučilišta u Zagrebu, Zagreb, Hrvatska<sup>3</sup>Zavod za mobilnu protetiku, Stomatološki fakultet Sveučilišta u Zagrebu, Zagreb, Hrvatska

**Svrha istraživanja** bila je procijeniti upotrebu štitnika za zube tijekom bavljenja borilačkim sportovima.

**Materijali i postupci:** Istraživanje je provedeno putem anonimnog on-line upitnika koji je poslan različitim borilačkim klubovima u Hrvatskoj, a koji su prosljedili link za upitnik svojim članovima. Istraživanje je uključilo 59 ispitanika. Dvadeset četvero ispitanika bavilo se boksom, 13 mješovitim borilačkim sportom (Mixed Martial Arts – MMA), 11 kickboksom dok se 11 ispitanika bavilo drugim vrstama borilačkih sportova.

**Rezultati:** Svih 59 ispitanika bilo je upoznato sa štitnicima za zube. Dvadeset sedam ispitanika je bilo profesionalno upoznato sa štitnicima za zube tijekom bavljenja borilačkim sportom, dok 32 nije. Pedeset i pet ispitanika odgovorilo je da nosi štitnik tijekom bavljenja sportom, dok 4 ispitanika nosi povremeno. Kao razlog povremenog nošenja naveden je problem u komunikaciji (1 ispitanik), ometanje disanja (2 ispitanika), teška dostupnost štitnika, dok jedan ispitanik smatra da štitnik nije potreban. 55 ispitanika koristi štitnik iz trgovine, dok 4 ispitanika koristi individualni izrađen kod stomatologa. Na pitanje „Ako ste ikad tijekom borbe primili udarac bez štitnika, kako bi procijenili razliku naspram primljenog udara sa štitnikom?“, 70,9 % ispitanika je procijenilo razliku kao veliku, 25,5 % kao srednju dok je 3,6 % ispitanika odgovorilo da je mala razlika.

**Zaključak:** Potrebno je poboljšati edukaciju boraca o vrstama i koristima štitnika za zube. Iako su poznate koristi štitnika za zube, određenom postotku boraca (u ovom istraživanju 5,1 %) mogu stvarati poteškoće prilikom bavljenja borilačkim sportom.

**PRIMJENA MINERAL TRIOKSIDA U ZBRINJAVANJU PERFORACIJA DNA PULPNE KOMORE: PRIKAZI SLUČAJEVA**Jurica Matijević<sup>1</sup>, Katarina Perić<sup>2</sup>, Anamarija Novaković<sup>2</sup>, Anita Orlović<sup>2</sup>, Nada Galić<sup>1</sup>, Goranka Prpić-Mehićić<sup>1</sup><sup>1</sup>Zavod za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska<sup>2</sup>Studentica 6. godine, Stomatološki fakultet, Sveučilište u Zagrebu, Zagreb, Hrvatska

**Uvod:** Uporaba mineral trioksidnog agregata (MTA) u endodonciji prihvaćena je kao zlatni standard za reparaciju i regeneraciju. Zatvaranje perforacija dna pulpne komore predstavlja indikaciju za korištenje MTA zbog njegovih bioaktivnih svojstava. Prikazana su dva slučaja zatvaranja proboja dna pulpne komore. Pacijentica, 30 g, upućena je na Zavod za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta u Zagrebu radi

**INADEQUATE ACCESS OPENING AND ITS CONSEQUENCES – A CASE REPORT**Silvana Jukić Krmek<sup>1</sup>, Renata Poljak Guberina<sup>2</sup><sup>1</sup>Department of Endodontics and Restorative Dentistry, School of Dental Medicine University of Zagreb, Zagreb, Croatia<sup>2</sup>Study Program of Dental medicine, Medical faculty University of Split, Split, Croatia

**Introduction:** The proper access opening is a precondition for successful endodontic treatment. The consequences of inadequate access opening can be numerous starting with missed canals, insufficient cleaning and shaping of endodontic space, iatrogenic perforations, ledge formation, and breakage of instruments. Insufficient preparation without removing the roof of the pulp chamber often results in a combination of these complications.

**Case report:** A 26-year-old patient was referred to the Department of Endodontics for the retreatment of tooth 26. X-ray analysis has shown, in addition to the extensive periapical lesion, inadequate root canal filling and separated instrument in the mesial root. After the removal of the existing restoration it was visible that endodontic treatment was performed through the roof of the pulp. The roof of the pulp chamber was removed and four root canals were instrumented. Although the separated instrument was in the apical part of the curved mesiobuccal canal it was possible to pass by it and complete the instrumentation. Canals were instrumented using Step-back technique and Hedstroem type of hand instruments with preflaring by Gates-Glidden burs. Filling was performed with gutta-percha and AH Plus sealer using cold lateral condensation technique. The control image showed appropriate filling of the root canals.

**INVESTIGATION OF THE USE OF MOUTHGUARDS DURING COMBAT SPORT PRACTICING**Ivan Lukšić<sup>1</sup>, Žiga Lužnik<sup>2</sup>, Samir Čimić<sup>3</sup><sup>1</sup>Student of the 4<sup>th</sup> year, School of Dental Medicine, University of Zagreb, Zagreb, Croatia<sup>2</sup>Student of the 3<sup>rd</sup> year, School of Dental Medicine, University of Zagreb, Zagreb, Croatia<sup>3</sup>Department of removable prosthodontics, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

**The aim** of this study was to evaluate mouthguard use among combat sport fighters.

**Materials and Methods:** Present study used anonymous online questionnaire. Questionnaire was sent to different combat sports clubs in Croatia, which forwarded the survey to club members. Study included 59 participants. Twenty four participants were practicing boxing, 13 Mixed Martial Arts - MMA, 11 kickboxing, and 11 participants were practicing other types of combat sports.

**Results:** All 59 participants were familiar with the use of mouthguards. Twenty seven participants were organizedly introduced with mouthguards, while 32 did not. Fifty-five participants responded that they are wearing mouthguard during sports practicing, and 4 participants wear it periodically. For the reason of periodical wearing of the mouthguard is listed communication problem (1 participant), breathing disturbance (2 participants), that mouthguard is not available (1 participant), while 1 participant claim that mouthguard is not necessary. Fifty-five participants use prefabricated mouthguard, and 4 participant use custom-made mouthguards. On the question „If You have ever been hit without the mouthguard, how would You estimated the difference compared to the same with the mouthguard?“ 70.9 % of the participants estimated the difference as great difference, 25.5 % as moderate difference, and 3.6% of participants estimated as small difference.

**Conclusions:** It is necessary to improve the education of the fighters on the types and benefits of the mouthguards. Although the benefits of mouthguards are well known, to a certain percentage of fighters (in present study 5.1 %) mouthguards can create some difficulties on performance during sports practicing.

**TREATMENT OF PULP CHAMBER FLOOR PERFORATION USING A MINERAL TRIOXIDE AGGREGATE: CASE REPORTS**Jurica Matijević<sup>1</sup>, Katarina Perić<sup>2</sup>, Anamarija Novaković<sup>2</sup>, Anita Orlović<sup>2</sup>, Nada Galić<sup>1</sup>, Goranka Prpić-Mehićić<sup>1</sup><sup>1</sup>Department of Endodontics and Restorative Dentistry, School of Dental Medicine, University of Zagreb, Zagreb, Croatia<sup>2</sup>Student of 6<sup>th</sup> year, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

**Introduction:** The use of mineral trioxide aggregate (MTA) in endodontics was accepted as a gold standard for regeneration and reparation, especially in the treatment of pulpal floor perforations (FP) due to its bioactivity. Two cases of FP treatment are shown. Female patient, 30 y.o., was referred to the Department of Endodontics and Restorative Dentistry at the Faculty of Dental Medicine in Zagreb for the treatment of the tooth 37, while the

bolova zuba 37, dok je pacijent, 23 g, upućen radi mišljenja o stanju zuba 46.

**Prikazi slučajeva:** U prvom slučaju zub 37 je imao razoreno dno pulpne komore u području interradikularne furkacije i prve trećine distalnog i mezijalnog korijena, dok je u drugom slučaju pronađeno je razoreno dno pulpne komore zuba 46 u području interradikularne furkacije i prve trećine distalnog korijena. Kod oboje pacijenata korijenski kanali nisu bili pronađeni. Nakon mandibularne anestezije (Septanest, Septodont) i postavljanja koferdama urasle granulacije su dodatno anestezirane i elektrokauterizirane. U prvom slučaju su nakon pronalaska korijenskih kanala, u njih su postavljeni endodontski instrumenti (tzv. „projektor tehnika“), te se dno odmah zatvorilo MTA Repair HP materijalom (Angelus). Prednost ovog unaprijedenog materijala temeljenog na MTA je u visokoj plastičnosti i novom radioopakeru, kalcij volframat, koji ne boji zub. Usljedila je instrumentacija i punjenje korijenskih kanala (AH Plus, Dentsply i gutaperka štapići, Roeko). U drugom slučaju je također učinjena projektor tehnika, no perforacija je privremeno bila zatvorena staklenoionomernim cementom (SIC) (Ionofil molar, Voco) a nakon punjenja korijenskih kanala i kontrolne rtg-slike, SIC je uklonjen te je na perforacije dna komore postavljen MTA Repair HP. U oba slučaja zubi su bili asimptomatski s uredanim kontrolnim rtg-om. Preko MTA je postavljen SIC (Fuji IX, GC). Nakon 3 mjeseca, oba zuba bila su u funkciji i bez simptoma, te su, nakon kontrolnih rtg snimki, postavljeni konačni kompozitni ispuni.

U opisanim slučajevima korištenjem visokoplastičnog MTA materijala koji ne boji zub možemo uspješno sanirati perforacije endodontskog prostora uz očuvanu estetiku.

#### RESORPCIJA KORIJENOVA GORNJEG TRAJNOG PRVOG MOLARA UZROKOVALA IMPAKCIJOM DRUGOG MOLARA: PRIKAZ SLUČAJA

<sup>1</sup>Ivana Parčina Amžić, <sup>2</sup>Marija Šimundić Munitić

<sup>1</sup>Zavod za dentalnu medicinu, Dom zdravlja SDŽ, Split, Hrvatska

<sup>2</sup>Zavod za endodonciju i restaurativnu dentalnu medicinu, Stomatološka poliklinika SDŽ, Split, Hrvatska

**Uvod:** Impakcija drugog molara je anomalija koja se vrlo rijetko pojavljuje. Ipak, važno je biti educiran i na vrijeme dijagnosticirati problem kako bi se provela odgovarajuća terapija koja će omogućiti zdravi eruptivni put i time sačuvati susjedni zub.

**Prikaz slučaja:** Na Zavod za endodonciju Stomatološke poliklinike upućen je zdravi 20-ogodišnjak zbog spontanih bolova u lijevom segmentu gornje čeljusti. Gornji lijevi prvi molar bio je zahvaćen opsežnim karijesom. Gornji lijevi drugi molar je nedostajao, iako je njegovo mjesto bilo sačuvano. Kliničkim pregledom i uzimanjem anamneze dijagnosticiran je ireverzibilni pulpitis gornjeg lijevog prvog molara. Da bi se uklonio simptom boli, izvršen je hitni endodontski zahvat. Endodontski instrument pasivno je postigao punu radnu duljinu u MB i P korijenskom kanalu, ali u DB kanalu nije napredovao dublje od koronarne polovice zbog tvrde prepreke. Također, tijekom postupka počelo je obilno krvarenje iz DB kanala koje je zaustavljeno nakon 15 min, ispiranjem fiziološkom otopinom. DB kanal je posušen, te je u zub postavljen uložak kalcijevog hidroksida i privremeni ispun. Analizom CBCT snimke utvrđeno je da je gornji lijevi prvi molar zahvaćen vanjskom apikalnom resorpcijom uzrokovanom prekomjernim pritiskom susjednog zuba, tj. gornjeg lijevog drugog molara. Obzirom na lošu prognozu zbog velike resorpcije DB korijena i opsežnog karijesa, indicirano je vađenje gornjeg lijevog prvog molara kako bi se oslobodio put za erupciju gornjeg lijevog drugog molara. Tri mjeseca poslije vađenja pacijent je došao na kontrolni pregled. Gornji lijevi drugi molar izrastao je na mjesto gornjeg lijevog prvog molara, iako malo bukalno nagnut.

male patient, 23 y.o., was referred for the treatment of the tooth 46.

**Case Reports:** In the first case, the tooth 37 had a FP of the furcation and the first third of the distal and mesial roots. In the second case the furcation and the first third of the distal root of the tooth 46 were damaged. In both patients root canals were not initially found. After mandibular block (Septanest, Septodont) and placement of rubber dam, ingrown granulations were removed. In the first case, after finding the root canals, a projector technique was performed and the perforation was closed with MTA Repair HP (Angelus). The advantages of this material are high plasticity and a non-staining radioopacifier (calcium tungstate). Root canals treatment was performed (AH Plus, Dentsply and gutta percha, Roeko). In the second case, a projector technique was also performed, but perforation was temporarily closed with glassionomere cement (GIC) (Ionofil molar, Voco). After the root canal treatment and control radiograph, GIC was removed and MTA Repair HP placed. In both cases, the teeth were asymptomatic with adequate control radiographs. After MTA was set, GIC was placed (Fuji IX, GC). Three months later, both teeth were in function and asymptomatic, control radiographs were taken and final composite fillings placed.

In these cases, the usage of high-plastic non-discoloring MTA material in successful repair of endodontic perforations with preserved aesthetics was demonstrated.

#### ROOT RESORPTION OF MAXILLARY PERMANENT FIRST MOLAR CAUSED BY IMPACTED SECOND MOLAR: A CASE REPORT

<sup>1</sup>Ivana Parčina Amžić, <sup>2</sup>Marija Šimundić Munitić

<sup>1</sup>Department of Dental Medicine, Health Center for the County of Dalmatia, Split, Croatia

<sup>2</sup>Department of Endodontics and Restorative Dentistry, Dental Medicine Polyclinic for the County of Dalmatia, Split, Croatia

**Introduction:** Impaction of a second molar is an anomaly that does not occur frequently. Nevertheless, it is important to be aware and make early diagnosis in order to perform appropriate therapy for obtaining a normal eruptive pathway and preserving the adjacent tooth.

**Case report:** A 20-year-old healthy man with a chief complaint of spontaneous pain episodes in the maxillary left segment was referred to endodontic department. Maxillary left first molar had extensive coronal caries. Maxillary left second molar was missing, although the space was preserved. Based on the clinical findings and anamnesis, the diagnosis of symptomatic irreversible pulpitis of the maxillary left first molar was established. For immediate pain control emergency endodontic treatment was performed. The endodontic instrument reached passively the working length of the MB and P root canal, but in the DB canal it did not advance farther than the coronal half because of a hard obstacle in the path. Additionally, during this procedure, profuse bleeding from the DB canal occurred and after 15 minutes it was stopped by irrigating the root canal with sterile saline solution. The DB canal was dried and dressed with calcium hydroxide and the tooth was provisionally sealed with a temporary filling material. On the basis of the CBCT evaluation, it was determined that maxillary left first molar had external apical root resorption related to excessive pressure formed by adjacent impacted tooth, i.e. the maxillary left second molar. Considering the poor prognosis due to severe root resorption and extensive caries of the maxillary left first molar, extraction was indicated to allow eruption of the maxillary left second molar. The patient was reviewed three months post-extraction. Maxillary left second molar erupted in the position of maxillary left first molar, although it was slightly buccally inclined.

#### IN VIVO USPOREDBA GENOTOKSIČNOG I CITOTOKSIČNOG UČINAKA RAZLIČITIH ZUBNIH PASTA BEZ FLUORIDA I S FLUORIDIMA

Antonija Tadin<sup>1</sup>, Milena Trutina-Gavran<sup>2</sup>, Lidia Gavić<sup>1</sup>, Tanja Gović<sup>1</sup>, Nada Galić<sup>3</sup>, Davor Željezić<sup>4</sup>

<sup>1</sup>Studij dentalne medicine, Medicinski fakultet, Sveučilište u Splitu, Šoltanska 2, 21 000 Split, Hrvatska

<sup>2</sup>Ordinacija dentalne medicine dr. Milena Trutina Gavran, 21276 Vrgorac, Hrvatska

<sup>3</sup>Zavod za endodonciju i restaurativnu stomatologiju, Stomatološki fakultet, Sveučilište u Zagrebu, Gundulićeva 5, 10 000 Zagreb, Hrvatska

<sup>4</sup>Jednica za mutagenezu, Institut za medicinska istraživanja i medicinu rada, Ksaverska 2, 10 000 Zagreb, Hrvatska

**Svrha istraživanja:** Paste za zube sadrže mnoge potencijalno štetne sastojke, uključujući neke koje mogu dovesti do ozbiljnih dugoročnih zdravstvenih problema. Svakodnevna upotreba proizvoda za oralnu zdravstvenu zaštitu je velika što naglašava potrebu da zdravstveni djelatnici i potrošači budu informirani o potencijalnim prednostima i rizicima

#### IN VIVO COMPARISON OF GENOTOXIC AND CYTOTOXIC EFFECTS OF DIFFERENT BRANDS OF TOOTHPASTE - WITHOUT AND WITH FLUORIDE

Antonija Tadin<sup>1</sup>, Milena Trutina-Gavran<sup>2</sup>, Lidia Gavić<sup>1</sup>, Tanja Gović<sup>1</sup>, Nada Galić<sup>3</sup>, Davor Željezić<sup>4</sup>

<sup>1</sup>Study Program of Dental Medicine, School of Medicine, University of Split, Split, Croatia

<sup>2</sup>Private Dental Practice Milena Trutina Gavran, 21276 Vrgorac, Croatia

<sup>3</sup>Department of Endodontics and Restorative Dentistry, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

<sup>4</sup>Division for Mutagenesis, Institute for Medical Research and Occupational Health, Ksaverska 2, 10 000 Zagreb, Croatia

**The aim:** Toothpaste contains many potentially harmful ingredients, including some that can lead to serious long-term health problems. Everyday use of oral health care products has increased, highlighting the need for healthcare clinicians and consumers to be informed of the potential benefits and risks associated with these products. The aim of this

povezanim s tim proizvodima. Ovo istraživanje bilo je usmjereno na procjenu mogućih DNK oštećenja u oralnim epitelnim stanicama kod sudionika koji su bili izloženi zubnim pastama s fluoridima u usporedbi s onima bez fluorida.

**Materijali i postupci:** Četrdeset volontera izabrano je među studentima dentalne medicine i podijeljeno u dvije eksperimentalne skupine. Svaka grupa koristila je prvo zubnu pastu bez fluorida kroz prva dva mjeseca, nakon čega je slijedila uporaba fluoridiranih vrsta istog proizvođača kroz isto vrijeme korištenja. Oralne epitelne stanice su uzorkovane na početku te 30, 60, 90 i 120 dana od početka uporabe ispitanih vrsta zubnih pasta. Kromosomska oštećenja analizirana su mikronukleus testom.

**Rezultati:** Obje testirane zubne paste s fluoridima pokazale su povećanje samo jednog ispitivanog parametra genotoksičnosti nakon 30 dana uporabe u usporedbi s vrijednostima dobivenima tijekom uporabe zubnih pasta bez fluorida. Nakon 60 dana korištenja svi promatrani parametri nisu bili značajno različiti od rezultata dobivenih u vrijeme kada su sudionici koristili zubne paste bez fluorida.

**Zaključak:** Na temelju rezultata može se zaključiti da nema razlike u citotoksičnosti i genotoksičnosti između različitih zubnih pasta s i bez fluorida.

study is to evaluate possible DNA damages to oral epithelial cells in participants exposed to toothpaste containing fluoride as opposed to the effects of non-fluoride toothpaste.

**Materials and Methods:** Forty volunteers were selected among students of dental medicine and assigned into two experimental groups. Each group used regular non-fluoride toothpaste for initial two months, followed by the use of fluoride toothpaste of the same brand for the next two months. The buccal epithelial cells were sampled at baseline and 30, 60, 90 and 120 days after the beginning of the research. Chromosomal damages were analyzed by micronucleus assay.

**Results:** Both tested toothpaste containing fluoride have shown an increase in only one of the examined parameters of genotoxicity after 30 days of use, in comparison to values during the use of non-fluoride toothpaste. In the same time, after 60 days of use all studied parameters were not significantly different from the results obtained at the time when the participants used non-fluoride toothpaste.

**Conclusion:** Based on the results, it can be concluded that there is no difference in cytotoxicity and genotoxicity between different brands of fluoride and non-fluoride toothpaste.